A Bacterial Evaluation Of Tonsillitis In Baghdad

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Abstract

A sample of 168 tonsillitic subjects (93 males and 75 females), living in Baghdad was evaluated microbiologically. The patients had an age range of 3-35 years. Four bacterial species were isolated and identified. They were β-haemolytic *Streptococcus* ,(39.3%) *Staphylococcus aureus*,(23.8%)*Haemophilus influenzae* (20.8%)and α-haemolytic *Streptococcus* . (16.1%)Sex differences in the prevalency of these bacteria were observed. Lancefield grouping of β-haemolytic *Streptococcus* showed five sero-groups (A, B, D, G and Non-typable). The A group dominated the list (72.7%), followed by the B group (13.6%), while the others shared a similar frequency (4.5%).

Introduction

Tonsillitis is a common inflammatory disease in different racial populations .It is more frequent in children and young adults with a peak incidence of an age range of 5 - 10 years. Several pathogens can cause the inflammation, in which β-haemolytic *Streptococcus* and other opportunistic bacteria (Gram-positive and Gram-negative) are a major causative factor (1,2,3,4), and may consequence in some health morbidity (5,6). Therefore, an identification of these causes may help in controlling such a disease. Accordingly, the present study aimed to isolate and characterize the inflammatory agents from tonsillitic Iraqi patients living in Baghdad.

Materials and Methods

A total of 168 patients (93 males and 75 females) were investigated. They had an age range of 3-35 years. The diagnosis was made at the E.N.T. units of AL-Nua'man General Hospital and Saddam Medical City (Baghdad), during the period October 1999-November 2000.

A throat swab was taken from each patient by a disposable swab applicator supplied with a transporting medium. Later on (2-4 hours), the swab was cultured on blood agar, and incubated for 24-48 hours at 37°C. Harvested colonies were firstly examined by the Gram stain method. Gram-positive colonies were re-examined with two enzymatic tests (catalase and coagulase), and coagulase-positive ones were further cultivated on Staph.110 medium.

Colonies of Beta-type haemolysis(β -haemolytic *Streptococcus*)were further examined by two tests: bacitracin and bile medium (10%). The isolated colonies of β -haemolytic streptococcus were subjected to Lancefield grouping. A streptococcal latex agglutination test (Avi Strept Kit; Omega Diagnostic Company) was employed to identify six sero-groups (A, B, C, D, G and F) (details of laboratory methods are presented in 7.(

Results

The isolation and identification showed four species of bacteria. They were(β-haemolytic *Streptococcus*) BHS ،(α-haemolytic *Streptococcus*) AHS ،*Staphylococcus aureus)* STA) and(*Haemophilus influenzae*) HMI) Table (1). Out of the 168 cultured swabs, 66 cultures (39.3%) were identified as BHS, while the STA, HMI and AHS accounted for 23.8, 20.8 and 16.1% of total , respectively Table (1). The BHS was more common in males than females (sex ratio = 2.5:1), while an opposite picture was observed in HMI (sex ratio = 0.5:1). These differences were highly significant (P> 0.001). No such differences were observed for STA and AHS, and the sex ratio was almost (1:1)

Lancefield grouping of BHS showed five sero-groups, which were A, B, D, G and Non-typable. The A group dominated the list with a frequency of 72.7%, followed by the B group (13.6%). The others shared

a similar frequency (4.5%).

Discussion

It is obvious that the BHS was the most common pathogen of tonsillitis in the investigated sample. This observation has also been reported in other racial groups (8,9,10). However, no information is available about the sex ratio. In this study , BHS was more prevalent in males (71.2%) than in females (28.8%). Such difference may raise the question of sexual predisposition to the infection with BHS. The best explanation of such finding may be gathered if the sex hormones are considered, especially if we consider that the adolescence shows disturbances in sex hormonal levels. Such a physiological change may predispose an individual to the infection with BHS. However, such conclusion may be reached if a larger sample is investigated, and a consideration of sex and age is made.

Serotyping of BHS attracts more attention, and the group A (GAS) landmarks the concept. Several research groups have investigated this subject, and the GAS is considered as a major cause of tonsillitis (11,12,13). The present data confirm these findings, and the BHS reached a frequency of 72.7%. Accordingly, the impact of GAS infection should be under an intensive investigation, especially if we consider that this pathogen is unique in initiating late non-suppurative sequelae, such as glomerulonephritis, rheumatic fever and rheumatic heart disease (5,6.(

In conclusion, the BHS is the most common inflammatory agent in tonsillitis, and the GAS also shares them in the present sample. Sexual differences in the prevalence are also apparent, although the number of patients was limited. Further investigations are required, and spotting some light on the immunologic and genetic backgrounds of patients is favored in this regard .

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Table (1): Types of isolated bacteria from patients with tonsillitis

Types of Bacteria	Patients with Tonsillitis						Sex Ratio (Male:female)
	Total (168)		Males (93)		Females (75)		
	No.	%	No.	%	No.	%	
β.*Streptococcus* haemolytic-	66	39.3	47	71.2	19	28.8	2.5:1
Staphylococcus aureus	40	23.8	22	55.0	18	45.0	1.2 :1
Haemophilus influenzae	35	20.8	12	34.3	23	65.7	0.5:1
α.*Streptococcus* haemolytic-	27	16.1	13	48.1	14	51.9	0.9 :1
X^2=13.646;Degrees of Freedom=3;p < 0.001.							

Table(2) Lancefield grouping of β -haemolytic *Streptococcus*

B - haemolytic *Streptococcu* (66 Patients)		
Sero groups	No.	%
A	48	72.7
B	9	13.6
D	3	4.5
G	3	4.5
Non -typable	3	4.5

مجلة ابن الهيثم للعلوم الصرفة والتطبيقية المجلد 19 (1) 2006

تقييم جرثومي لخمج اللوزتين في بغداد

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الخلاصة

قيمت الحالة الجرثومية لخمج اللوزتين في168 مريض من مدينة بغداد وبمدى عمري3-35 سنة .

أوضح العزل والتشخيص أربعة أنواع جرثومية وهي الجرثومةالعنديةالمحللةللدم بيتا (39,3%) والعنقودية الذهبية (23,8 %) و Haemophilus influenzae (8، 20 %) والجرثومة المحلة للدم ألفا (16,1%)، وقد اختلفت النسب المئوية للخمج هذه الأنواع باختلاف الجنس . وعند تصنيف النوع الأول حسب طريقة لانسفيلد خمسة مجاميع مصلية (أ ، ب،د،ج، غير مشخصة). كانت المجموعة أ اكثرها تكرارا (72,7%) وتلتها في ذلك المجموعة ب (13,6 %) في حين تماثلت النسب المئوية الباقية (4,5 %) .